REMARKS

The present Amendment is responsive to the Official Action mailed March 22, 2011. A petition for a three-month extension of the term for response to said Official Action, to and including September 22, 2011, is transmitted herewith. A Request for Continued Examination is also submitted herewith.

Claims 21-26 and 28-30 are pending in the application, with claim 21 being independent. Claim 21 has been amended herein.

In view of the above amendments and following remarks, reconsideration of the Examiner's rejections is respectfully requested.

I. INTERVIEW SUMMARY

The courtesy of the Examiner in arranging for the telephone interview on August 5, 2011, with undersigned counsel is greatly appreciated. In accordance with 37 C.F.R. § 1.133(b), the substance of the interview is summarized below.

During the interview, Applicants' representative argued that U.S. Pat. Appl. Pub. No. 2002/0009868 to Tobashi *et al.* ("*Tobashi*") does not teach or suggest maintaining the various gas streams at the same velocity. Applicants' representative argued that the mention of "uniformaliz[ing] the flow of gas" in paragraph [0007] of *Tobashi*, which relates to prior art reactors as shown in FIG. 3, is not a teaching of equalizing the velocities of gases in different zones of a plural zone reactor, like that disclosed in FIGS. 1 and 2. In fact, *Tobashi* specifically teaches adjusting the gas flow rate to each of those zones (*see, e.g.*, ¶¶ [0049], [0057]), and one embodiment provides partitioning walls 7 extending downwardly from the injector to suppress disturbance between the adjacent, differently moving gas streams (*see, e.g.* ¶ [0051] and

FIG. 2).

Applicants' representative also traversed the rejection of dependent claim 27, arguing that the Examiner's position in the Official Action is incorrect as a factual matter, as there is a distinction between a linear function and a proportional relationship as claimed. Applicants' positions regarding this claim feature are discussed in more detail below.

II. ELECTION/RESTRICTIONS

Applicants continue to disagree with the propriety of maintaining the Unity of Invention objection requiring an election between the apparatus and method claims. For those reasons discussed in the previous responses, Applicants continue to assert that there is at least one special technical feature which is common to all of the claims and which the applied prior art fails to teach or suggest. Nevertheless, the withdrawn apparatus claims have been canceled by the present Amendment, and Applicants reserve the right to file a divisional application corresponding to those canceled claims.

III. CLAIM REJECTIONS – 35 U.S.C. § 102

In the Official Action, claims 21-24 and 27-30 were rejected under 35 U.S.C. § 102(b) as being anticipated by *Tobashi*.

As discussed in Applicants' last Amendment, *Tobashi* discloses a reactor and a trial-and-error method for growing a thin film having uniform thickness and uniform electric properties. The reactor B includes adjusting means 8, 9 (*see* FIG. 1) for adjusting the flow rate or the concentration of the reaction gas that is fed to gas feed ports 1, 2. The gas feed ports 1, 2 then feed the gases into respective concentric chambers radially separated by walls 7 and having flow stabilizer plates 3 on their downstream

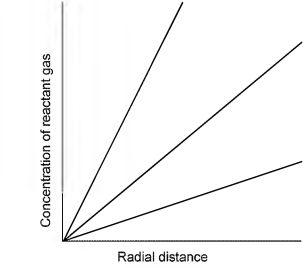
ends. The stabilizer plates 3 make the gas flow more uniform before it continues downwards towards the wafer substrate A. Each concentric chamber (*i.e.*, central and outer) is associated with a respective zone of the reactor.

Tobashi teaches gradually increasing or decreasing one or more of: the relative flow rates of the reaction gas between the concentric zones; the relative concentrations of the reaction gas between the zones; and the relative concentrations of the dopant between the zones. (*See*, *e.g.*, *Tobashi* ¶ [0049].) The one or more variables can be adjusted and the resulting films tested in a trial-and-error method of equalizing the film-forming rate and resistivity over the whole wafer substrate. (*See* exemplary test results in the Examples and Table 1.)

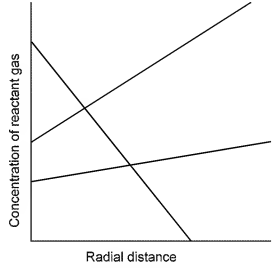
For those reasons stated during the interview (summarized above) and in Applicants' last Amendment, *Tobashi* fails to teach or suggest all of the features recited in independent claim 21 as previously presented. Nevertheless, claim 21 has been amended herein to include the feature of dependent claim 27 reciting that the concentration of reactant gas in each stream is substantially proportional to the radial distance of the stream from the axis of rotation of the substrate support. Applicants assert that the outstanding rejection of dependent claim 27 is deficient, and independent claim 21 as currently amended herein clearly distinguishes over *Tobashi*.

In the Official Action, the Examiner stated that "[a]ny two points can be approximated by a line, that is as a function with a constant proportion perfectly fitting them." (Official Action 4.) However, as discussed during the interview, this position is incorrect as a factual matter. The term "proportional" is commonly understood as meaning having a constant ratio. By definition, a

function having a proportional relationship to a particular variable must have a zero value when the variable has a zero value. In contrast, a linear function more generally is not so constrained. This is illustrated in the graphs below, in which the functions (*e.g.*, concentration of reactant gas) having a proportional relationship to radial distance all intersect the X-axis at the origin.



Proportional functions



Linear functions

Therefore, a function (*i.e.*, concentration of reactant gas) which is "substantially proportional" to radial distance from an axis, as recited in currently amended claim 21, must have a value which is substantially zero at the axis. Nowhere does *Tobashi* teach or suggest that the concentration of reactant gas should have such a relationship as claimed.

Tobashi teaches a reactor that may be divided into a central section surrounded by one or two annular sections. (*See*, *e.g.*, ¶ [0059].) In the case of three total sections, *Tobashi* teaches that the ratios of the concentrations of reactant gas (such as SiH_4) in the central, intermediate, and outer sections may be set somewhere between 1:0.5:0.25 to 1:2:4. (*See id.*) Therefore, the reactant

gas has a defined, non-zero concentration in the central section, and the concentration either increases or decreases in the successive intermediate and outer sections. For example, in the two zone reactor of Ex. 4 in Table 1, *Tobashi* states that the concentrations of reactant gas used were 0.4 g/min in the central section and 0.75 g/min in the peripheral section. Clearly *Tobashi* does not teach or suggest that the concentration of reactant gas should be substantially zero at the central axis and vary proportionally with radial distance.

During the telephone interview, the Examiner suggested that, even though the reactant gas concentrations of *Tobashi* are not proportional, they could be considered "substantially" proportional, as recited in claim 27. This contention is respectfully traversed, however, as it is both factually and legally incorrect.

In Examining Applicants' claims, the Examiner is obligated to give the claims their "broadest reasonable interpretation consistent with the specification." Manual of Patent Examining Procedure ("M.P.E.P."), 8th Ed., Rev. 8, § 2111 (*citing Phillips v. AWH Corp.*, 415 F.3d 1303, 75 U.S.P.Q.2d 1321 (Fed. Cir. 2005) [hereinafter *Philips*]). This means that the words of the claim must be given their "plain meaning" unless the plain meaning is inconsistent with the specification. *Id.* at § 2111.01(I) (*citing In re Zletz*, 893 F.2d 319, 321, 13 U.S.P.Q.2d 1320, 1322 (Fed. Cir. 1989)). "Plain meaning," in turn, refers to the "ordinary and customary meaning," which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention . . . ." *Id.* at § 2111.01(III) (*citing Philips*).

A person of ordinary skill in the art would understand that the relevant language of claim 21 requires the reactant gas

concentration to be proportional to radial distance, while allowing for trivial deviations in concentration that do not have an appreciable effect on the uniformity of the resulting deposited material. This understanding is consistent with the way that the word "substantially" has been interpreted in other cases. For example, noting that claim terms are given their "broadest reasonable construction in light of the Specification," the Board of Patent Appeals and Interferences interpreted language in a claim reciting a composition that is "substantially free" of particular compounds as specifying that the composition "can be 'largely' to entirely free of [the particular] compounds, using the ordinary meaning of 'substantially.'" *Ex Parte Juanita M. Cassidy et al.*, Appeal No. 2009-009182, Appl. No. 11/235,397, 2011 WL 309555, at *2 (B.P.A.I. Jan 28, 2011) (*citing York Prods., Inc. v. Central Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1572-73 (Fed. Cir. 1996) ("In this case, the patent discloses no novel use of claim words. Ordinarily, therefore, 'substantially' means 'considerable in . . . extent,' *American Heritage Dictionary Second College Edition 1213* (2d ed. 1982), or 'largely but not wholly that which is specified,' *Webster's Ninth New Collegiate Dictionary* 1176 (9th ed. 1983))).

As discussed above, *Tobashi* teaches that the reactant concentration in the central section of the injector has a decidedly non-zero value, and the other section(s) either increase or decrease within a broad range of ratios. A person of ordinary skill in the art would not consider this disclosure of *Tobashi* to be anything resembling a teaching of making the reactant gas concentration "substantially proportional" to radial distance, as recited in currently amended independent claim 21. In fact, a person having ordinary skill in the art would not understand

Tobashi as teaching any particular relationship between concentration and radial distance, other than a teaching of a broad range of increasing or decreasing ratios from which to select.

Furthermore, by interpreting Applicants' claim language such that it reads on *Tobashi*, the Examiner is using the term "substantially" to read the term "proportional" right out of the claim, such that the words "substantially proportional" no longer having any real meaning. This interpretation is unreasonably broad and is improper. *See Ex Parte Theodore R. Zeigler*, Appeal No. 2009-007562, Appl. No. 10/779,641, 2010 WL 2770204, at *2 (B.P.A.I. July 9, 2010) ("While the term 'substantially' in claim 1 allows for some incidental relative offset of the recited ends, the Examiner's construction of 'substantially adjacent' as encompassing an offset on the order of a substantial portion, i.e., more than two-thirds, of the length of the first strut, effectively ignores the term 'adjacent' . . . , rendering it superfluous, and thus is unreasonably broad and not supported by Appellant's Specification" (*citing Stumbo v. Eastman Outdoors, Inc.*, 508 F.3d 1358, 1362 (Fed. Cir. 2007) (denouncing claim constructions which render phrases in claims superfluous))). Moreover, the Examiner's unduly broad interpretation of "substantially proportional" is certainly not consistent with the "ordinary meaning" that those words have to a person of ordinary skill in the art, as discussed above.

In view of the foregoing, if the language of currently amended claim 21 is properly construed, it is clear that *Tobashi* neither teaches nor suggests that the concentration of reactant gas in each stream should be "substantially proportional to a radial distance of the stream from said axis," as recited in the claim. Therefore, claim 21 distinguishes over *Tobashi*, and the rejection of the claim must now be withdrawn. Additionally, due at least to the

dependency of claims 22-24 and 28-30 from independent claim 21, the rejection of such dependent claims over *Tobashi* must also be withdrawn.

IV. CLAIM REJECTIONS – 35 U.S.C. § 103

Dependent claim 25 was rejected under 35 U.S.C. § 103(a) as being obvious over *Tobashi* in view of U.S. Patent No. 4,980,204 to Fujii *et al*. ("*Fujii*"). Dependent claim 26 was rejected under § 103(a) as being obvious over *Tobashi* in view of U.S. Patent No. 4,010,045 to Ruehrwein ("*Ruehrwein*").

Neither *Fujii* nor *Ruehrwein* were relied on as teaching anything that would remedy the deficiencies of *Tobashi* discussed above with respect to claim 21. Therefore, due at least to the dependency of claims 25 and 26 from independent claim 21, the rejection of such dependent claims should be withdrawn.

V. CONCLUSION

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he telephone Applicants' attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: September 22, 2011

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